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10/518,845	12/21/2004	Marie Jacob	FR 020067	1286

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EXAMINER	
PARK, EDWARD	
ART UNIT	PAPER NUMBER
2624	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,845	JACOB ET AL.	
	Examiner	Art Unit	
	EDWARD PARK	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *27 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is responsive to applicant's amendment and remarks received on 2/27/08. Claims 1-15 are currently pending.

Drawings

2. In response to applicant's amendment of figure 5, the previous drawing objection is withdrawn.

Claim Objections

3. In response to applicant's amendment of claims 5 and 8-10, the previous claim objection to claims 7-10 for multiple dependency has been withdrawn.

In response to applicant's amendment of claim 3, the previous claim objection has been withdrawn.

Claim Objections - 37 CFR 1.75(a)

4. In response to applicant's amendment of claim 5 to depend from claim 4 instead of claim 1, the previous claim objection has been withdrawn.

Claim Rejections - 35 USC § 101

5. In response to applicant's amendment of claim 13, the previous claim rejection has been withdrawn.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 1-6, 7/1, 8-12, 13/1, 14, 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Maurincomme et al. (US 6,879,711 B2) with Metaxas (US 6,295,464 B1), and further in view of Ryals et al (US 5,803,914)

Regarding **claim 1, 2**, Maurincomme discloses an image processing system for displaying information relating to the amplitude of displacements of wall regions of a deformable 3D object under study, the system comprising: acquisition means for acquiring image data of an image sequence of the 3D object under study (col. 1, lines 59-65: three-dimensional digital angiography image obtained by means of a radiology apparatus and a three-dimensional digital image obtained by means of a nuclear magnet resonance apparatus; col. 3, lines 65-67; col. 4, lines 1-22);

processing means for:

processing the 3D object data in the images of the sequence for locating the 3D object wall (see figure 5, numeral 19; col. 11, lines 22-50 the outer surface is determined which is equivalent to a wall),

defining regions of interest on the object wall (see figure 5, numeral 20; col. lines 22-50 the inner surface is considered the region on interest on the object wall which can be seen since it is contained within the surface of figure 5, numeral 19; which is further seen in detail in figure 7), and

constructing a first 2D simplified representation of the 3D object wall by projection of the 3D object wall along an axis, comprising the projections of the regions of interest in said 2D simplified representation (figure 7).

Maurincomme does not disclose processing the image data of the 3D object wall to determine the amplitude of displacement each of said regions of interest in function of time and displaying indications of the amplitudes of displacement of each of the regions of interest of the 3D object wall in the respective projections of said regions of interest, called segments, in said constructed 2D simplified representation; and maximal or minimal amplitudes of displacements of the regions of interest over a period of time.

Metaxas teaches processing the image data of the 3D object wall to determine the amplitude of displacement of each of said regions of interest as a function of time (figure 9a-c) and maximal or minimal amplitudes of displacements of the regions of interest over a period of time (col. 12, lines 45-63).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme teaching to determine amplitude of displacement as a function of time as suggested by Metaxas, in order to track the motion of the object/region of interest for “characterization of heart wall motion on a regional level to understand cardiac mechanics and the processes underlying a disease" (Metaxas: col. 2, lines 31-35).

Ryals teaches comprising display means for: displaying indications of the amplitudes of displacement of each of the regions of interest of the 3D object wail in the respective projections of said regions of interest, called segments, in said constructed 2D simplified representation (figure 15, numeral 1528).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme with Metaxas combination to display indications of amplitudes of displacement as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Regarding **claims 3, 4**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 1. Marincomme, Metaxas, with Ryals combination further discloses displaying indication of the instants of time at which the maximum or minimum of amplitudes of displacements occur in the regions of interest, over said period of time, in said 2D simplified phase representation (see Metaxas: figure 9a-9c; col. 12, lines 45-63). Marincomme, Metaxas, with Ryals combination as applied to claim 1 does not disclose constructing a second 2D simplified representation of the 3D object wall called 2D simplified phase representation; displaying 2D simplified phase representation; and means to display the 2D simplified amplitude representation and the 2D simplified phase representation together in a same image.

Ryals teaches constructing a second 2D simplified representation of the 3D object wall called 2D simplified phase representation; displaying 2D simplified phase representation (col. 5, lines 50-67; means for displaying a first image during diastolic phase of a cardiac cycle and

systolic phase); and means to display the 2D simplified amplitude representation and the 2D simplified phase representation together in a same image (figure 13; col. 38, lines 27-48).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 1 to utilize a phase representation and display it simultaneously with the amplitude representation as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest and to further enhance the visual information available to the user.

Regarding **claim 5**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 4. Marincomme, Metaxas, with Ryals combination as applied to claim 4 does not teach display the values of amplitude and of time in the respective 2D simplified amplitude representation in a color-coded manner.

Ryals teaches display the values of amplitude (figure 13, numeral 1370) and of time (figure 3, numeral 365) in the respective 2D simplified amplitude representation in a color-coded manner (figure 15, numeral 1528).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 4 to display indications of amplitudes of displacement in a color-coded manner as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Regarding **claim 6**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 1. Marincomme, Metaxas, with Ryals combination as

applied to claim 1 does not disclose means to display indications of the amplitudes of displacement of the regions of interest of the 3D object wall in the respective projections of the regions of interest, called segments, in said constructed 2D simplified representation, in a color-coded manner, the indications of the amplitudes of displacement changing in the segments at the rate of the images of the sequence, so as to form an animated 2D simplified representation as a function of time.

Ryals teaches means to display (figure 2, numeral 105) indications of the amplitudes of displacement of the regions of interest of the 3D object wall in the respective projections of the regions of interest, called segments, in said constructed 2D simplified representation, in a color-coded manner, the indications of the amplitudes of displacement changing in the segments at the rate of the images of the sequence, so as to form an animated 2D simplified representation as a function of time (figure 13; col. 39, lines 39-67; col. 40, lines 1-67).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 1 to display indications of amplitudes of displacement in a color-coded manner as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Regarding **claim 7/1**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 1. Marincomme, Metaxas, with Ryals combination as applied to claim 1 does not disclose means to display the 2D simplified representation of the 3-D object wall as 2D bull's eye representations.

Ryals, in the same field of endeavor, teaches means to display the 2D simplified representation of the 3-D object wall as 2D bull's eye representations (see fig. 14, col. 44, lines 55-67, col. 45, lines 1-67).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 1 to utilize a bull's eye representation as suggested by Ryals, in order to enhance "diagnosing cardiac disease and detecting ischemic areas that would otherwise be falsely identified as an infarct" (see col. 45, lines 38-56).

Regarding **claim 8**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 1. Marincomme, Metaxas, with Ryals combination as applied to claim 1 does not disclose a heart left ventricle and the regions of interest include the internal boundary of the left ventricle wall.

Metaxas, in the same field of endeavor, discloses a heart left ventricle and the regions of interest include the internal boundary of the left ventricle wall (see figures 9a-9c).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 1 to study a heart left ventricle as suggested by Ryals, in order to accurately measure heart wall motion "to understand cardiac mechanics and the processes of underlying a disease" (see col. 2, lines 31-39).

Regarding **claim 9**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 1. Marincomme, Metaxas, with Ryals combination as applied to claim 1 does not disclose segmentation means for operating a segmentation technique

applied to the 3D object under study, which includes using a mesh model technique, and reshaping the mesh model for mapping said mesh model onto the wall of the 3D object under study, so as to provide a simplified volume with a wall, called object wall, that is the object of interest.

Metaxas, in the same field of endeavor, discloses segmentation means for operating a segmentation technique applied to the 3D object under study, which includes using a mesh model technique, and reshaping the mesh model for mapping said mesh model onto the wall of the 3D object under study, so as to provide a simplified volume with a wall, called object wall, that is the object of interest (see col. 7, lines 45-56).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 1 to utilize a mesh model as suggested by Metaxas, in order to provide "dynamic modeling of the human heart and provide a visually perceptible representation of the object which can be intuitively understood by an observer of the display and provide quantitative data regarding the object [such as] the nature and extent of a myocardial defect" (see col. 3, lines 23-31).

Regarding **claim 10**, Maurincomme discloses a suitably programmed computer (col. 4, lines 28-38) or a special purpose process having circuit means, which are arranged to process image data as claimed in claim 1, and having means to display the processed images (see col. 4, lines 45-52; three-dimensional images displayed on the screen).

Regarding **claims 11, 13/1**, Maurincomme discloses an image processing method and a computer program product comprising a computer readable medium (col. 4, lines 28-38) comprising steps of: acquiring image data of an image sequence of the organ under study ("fifty

DSA image"… "acquired sequence"; col. 3, lines 65-67; col. 4, lines 1-23), segmenting the 3-D organ in the images of the sequence for locating the 3D object wall (figure 5, figure 6; the 3-D organ is segmented), defining regions of interest on the segmented 3D organ wall (figure 5, numeral 19), and

constructing a first 2D simplified representation of the 3D segmented organ wall by projection of the 3D segmented organ wall along an axis, comprising the projection(s) of the regions of interest in said 2D simplified representation (figure 7) and a computer program product.

Maurincomme does not disclose processing the image data to determine the amplitude of displacement of each of said regions of interest as a function of time; and displaying indications of the amplitudes of displacement of the regions of interest of the 3D segmented organ wall in the respective projections of the regions of interest, called segments, in said constructed 2D simplified representation, in a color coded manner.

Metaxas teaches processing the image data to determine the amplitude of displacement of each said regions of interest as a function of time (col. 12, lines 45-63).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme teaching to determine amplitude of displacement as a function of time as suggested by Metaxas, in order to track the motion of the object/region of interest for "characterization of heart wall motion on a regional level to understand cardiac mechanics and the processes underlying a disease" (Metaxas: col. 2, lines 31-35).

Ryals teaches displaying indications of the amplitudes of displacement of the regions of interest of the 3D segmented organ wall in the respective projections of the regions of interest,

called segments, in said constructed 2D simplified representation, in a color coded manner (figure 15, numeral 1528).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme with Metaxas combination to display indications of amplitudes of displacement as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Regarding **claim 12**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 11. Marincomme, Metaxas, with Ryals combination as applied to claim 11 does not teach displaying indications of the maximal or minimal amplitudes of displacement of the region(s) of interest;

constructing a second 2D simplified representation being called 2D simplified phase representation;

displaying indications of the instants of time at which the maximum or minimum of amplitudes of displacements occur(s) in the region(s) of interest, over a period of time, in said 2D simplified phase representation; and displaying the 2D simplified amplitude representation and the 2D simplified phase representation in a same image at the same time.

Metaxas discloses maximal or minimal amplitudes of displacements of the region(s) of interest over a period of time (col. 12, lines 45-63).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 11 to utilize maximal minimal amplitude of displacement as suggested by Metaxas, in order to enhance the tracking of the motion of the object/region of interest for "characterization of heart

wall motion on a regional level to understand cardiac mechanics and the processes underlying a disease" (Metaxas: col. 2, lines 31-35).

Ryals teaches constructing a second 2D simplified representation being called 2D simplified phase representation (col. 5, lines 50-67; means for displaying a first image during diastolic phase of a cardiac cycle and systolic phase); displaying indications of the instants of time at which the maximum or minimum of amplitudes of displacements occur(s) in the region(s) of interest, over a period of time, in said 2D simplified phase representation (figure 13; col. 38, lines 27-48); and displaying the 2D simplified amplitude representation and the 2D simplified phase representation in a same image at the same time (figure 13; col. 38, lines 27-48).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied above to utilize a phase representation and display it simultaneously with the amplitude representation as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest and to further enhance the visual information available to the user.

Regarding **claim 14**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 11. Marincomme, Metaxas, with Ryals combination as applied to claim 11 does not teach displaying values of the amplitudes in a color-coded manner.

Ryals, in the same field of endeavor, teaches display displaying values of the amplitudes (figure 13, numeral 1370) in a color-coded manner (figure 15, numeral 1528).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 11 to display values of amplitudes of displacement in a color-coded manner as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Regarding **claim 15**, Maurincomme, Metaxas, with Ryals combination discloses all elements as mentioned above in claim 12. Marincomme, Metaxas, with Ryals combination as applied to claim 12 does not teach displaying values of the amplitudes and of the instants in time in a color-coded manner.

Ryals, in the same field of endeavor, teaches displaying values of the amplitudes (figure 13, numeral 1370) and of the instants in time (figure 3, numeral 365) in a color-coded manner (figure 15, numeral 1528).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Maurincomme, Metaxas, with Ryals combination as applied to claim 11 to display values of amplitudes of displacement in a color-coded manner as suggested by Ryals, in order for the user to easily observe any significant changes in the displacement of the region of interest.

Response to Arguments

8. Applicant's arguments filed on 2/27/08, in regards to **claim 1**, have been fully considered but they are not persuasive. Applicant argues that the processing of the image data of a 3D

object wall to determine the amplitude of displacement of a plurality of regions of interest as a function of time is not disclosed by Metaxas. This argument is not considered persuasive since the claim calls for processing of the image data of a 3D object wall which can be seen in figures. 9a-9c. Applicant argues that the Metaxas reference does not disclose an object wall which is not considered persuasive again by figures 9a-9c, which clearly shows an object wall of a ventricle. Applicant further argues that the Metaxas reference does not disclose determining the amplitude of displacement of a plurality of regions of interest as a function of time. This argument is not considered persuasive by col. 12, lines 45-63, which calculates the change in distance/amplitude from one time to the next. Lastly, applicant argues that figures 9a-9c do not show any image data of a 3D object wall. This argument is not considered persuasive since the claim calls for processing of the image data of a 3D object wall. The figures 9a-9c, applicant admits are models of a left ventricular behavior, which meets the limitations of the claim since the models are developed from the processing of the image data of a 3D object wall.

Applicant argues that the combination of Maurincomme and Metaxas is improper due to Maurincomme dealing with registering a 3D X-ray image with a 3D nuclear NMR image while Metaxas discloses a model of the left ventricle of the heart. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Metaxas is only

bringing in the concept of processing of the image data of a 3D object wall to determine the amplitude of displacement of a plurality of regions of interest as a function of time, no more or less. This concept is incorporated to the primary reference, Maurincomme, to create a combination to meet the scope and limitations of claim 1. Therefore, applicant's argument is not considered persuasive since only the concept is brought into Maurincomme for combination, instead of the Metaxas reference as a whole.

Regarding **claim 2**, applicant argues that the claim is patentable due to its dependency from claim 1. This argument is not considered persuasive since the rejection of claim 1 stands and the arguments and rejection can be seen above. Furthermore, the applicant argues that Metaxas does not disclose a maximal or minimal amplitude of displacements or plurality of regions of interest. This argument is not considered persuasive since a maximal or minimal amplitude of displacements is disclosed at col. 12, lines 45-62, where "a relatively uniform longitudinal contraction from apex to base can be captured" and figures 9a-9c disclose a plurality of regions of interest as the model is equivalent to a plurality of regions of interest.

Regarding **claim 3**, applicant argues that the Maurincomme, Metaxas, and Ryals combination does not disclose displaying indication of the instants of time at which the maximum or minimum of amplitudes of displacements occur in the regions of interest, over said period of time, in said 2D simplified phase representation. This argument is not considered persuasive since Metaxas discloses this claim limitation and is also mentioned in the previous claim 2.

Regarding **claim 4**, applicant argues that the Ryals reference does not disclose a display of the 2D simplified amplitude representation and the 2D simplified phase representation

together in a same image. This argument is not considered persuasive since the two images are shown simultaneously in Ryals, col. 38, lines 27-48.

Regarding **claim 5**, applicant incorrectly argues claim limitations in the argument section of claim 5. Applicant refers to claim 4 in reference to the arguments for claim 5. The arguments for claim 5 are identical to the arguments for claim 4. Therefore, the argument for claim 5 is not considered persuasive.

Regarding **claim 11**, applicant argues that the claim limitations are not met due to the same arguments of claim 1. This argument is not considered persuasive since the rejection of claim 1 stands and the rejection and arguments can be seen above for claim 1. Refer to argument section for claim 1 above for claim 11.

Regarding **claim 12-13**, applicant argues that the claim limitations are patentable due to the dependency from claim 11. This argument is not considered persuasive since the rejection of claim 11 stands and the arguments and rejection can be seen above. Furthermore, applicant argues that the claim limitations are patentable for reasons similar to claim 3. This argument is not considered persuasive since the rejection of claim 3 stands and the arguments and rejection can be seen above.

Regarding **claims 14-15**, applicant argues that claim limitations are patentable for similar reasons to those set forth to claim 11, 2, and 5. This argument is not considered persuasive since the rejection claim 11, 2 and 5 stand and the arguments and rejection can be seen above.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PARK whose telephone number is (571)270-1576. The examiner can normally be reached on M-F 10:30 - 20:00, (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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